

Pension Reform

Is There a Tradeoff between Efficiency and Equity?

Estelle James

The pension reforms being undertaken in Latin America seem to be improving efficiency and growth, but they should also be designed to improve equity. It is possible for pension reform to improve both equity and efficiency — producing a win-win situation rather than a tradeoff.



Summary findings

In the past decade, Latin America has taken the lead in structural pension reform which replaces a publicly managed pay-as-you-go defined-benefit system with a system of privately managed, fully funded defined-contribution accounts supplemented by a social safety net. This arrangement is designed to improve efficiency and growth, and preliminary evidence suggests that it has been successful in doing so.

But traditional social security systems have been justified on the grounds that they are equitable and redistribute to low-income groups. Are we in danger of exchanging equity for efficiency?

James argues that in fact traditional systems produce many inequities, both within cohorts and across cohorts. So it is possible for pension reform to improve both equity and efficiency — a win-win situation rather than a tradeoff. The reforms undertaken thus far have indeed reduced existing equity problems, but some old equity problems remain and some new ones have been created.

The main policy lesson is this: Pension reforms should be carefully designed to improve equity as well as efficiency and growth. Only further empirical analyses will determine whether the redistributive goal has been achieved.

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Pension Reform: Is There An Efficiency-Equity Trade-Off?¹

During the past decade, Latin America has been in the forefront of pension reform. The experiment that started in 1980 with Chile has been carried on by Argentina, Colombia, Peru, Mexico and Uruguay. The reforms have usually been sold on grounds of their impact on efficiency and growth. What about their impact on equity and equality? Traditional social security systems have frequently been justified on grounds that they are equitable and redistribute to low income groups--this has been cited as a trade-off for the inefficiencies that they entail. As social security systems around the world reform, are we in danger of exchanging equity for efficiency?

This paper argues that traditional systems--that is, pay-as-you-go defined benefit systems--in fact produce many inequities, both within cohorts and across cohorts. These inequities have been found in every country where these systems exist, with some of the most egregious examples in Latin America. In fact, from the vantage point of the average citizen, the inequities may have been a more potent rationale for reform than the inefficiencies.

The reforms, which typically replace a publicly-managed pay-as-you-go defined benefit (PAYG DB) system with a system of privately-managed fully funded defined contribution (FF DC) accounts supplemented by a social safety net, reduce the pre-existing equity problems. Moreover, by raising national saving, deepening the financial markets through which these savings are funnelled, and reducing labor market distortions, they also enhance growth. In this sense, the recent wave of pension reforms have the potential to improve both equity and efficiency. Have they fulfilled this potential?

Recent research has attempted to quantify the efficiency gains in Chile and elsewhere. However, the distributional effects have not yet been quantified. While removing the pre-existing inequities, especially the inter-generational

¹ The first half of this paper draws heavily on World Bank 1994. Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth, of which Estelle James was the principal author.

inequities, in some cases the reforms have appeared to create new equity problems. Some of these were due to design features of the reform that could be changed, underscoring the importance of designing reform policies and their implementation with great care. Some were due to the advantages that people with more income, assets and education always have over those with less, that cannot so easily be changed. At the same time, we must recognize that the concept of equity means different things in different societies, so it would not be surprising to find varying distributional outcomes across reforming countries. In this paper I loosely define equity to mean redistributing from high to low earners or other redistributions that are explicitly agreed upon collectively after an open discussion.

Part I briefly outlines the inefficiencies introduced by traditional PAYG DB pension systems. Part II summarizes the inequities they created. Part III shows how the reformed systems have improved efficiency and growth, and Part IV discusses their equity effects, both positive and negative.

I. Inefficiencies in PAYG DB Systems

The inefficiencies introduced by PAYG DB systems are well known and will be only briefly summarized here. They include:

High payroll taxes with negative effects on employment. Most traditional systems are financed through payroll taxes, which rise dramatically as populations age and engender labor market distortions--less employment and labor effort--unless the supply of labor is totally inelastic. In Brazil, Ecuador, Paraguay and Uruguay, payroll taxes for pensions exceed 20%, placing them among the highest in the world--on par with European countries where the populations are much older. While empirical evidence suggests that take-home pay rather than employment falls in industrialized countries, this is less likely to be the case in developing countries where workers can easily escape to the informal sector.

Allocation of labor to the informal sector. High payroll tax rates that are not linked to benefits lead to evasion and escape to the informal sector. Since

firms in the informal sector have less access to capital and product markets, labor is likely to be less productive there. In many Latin American countries over 40% of the labor force works in the informal sector, partly in order to avoid high payroll taxes, and the informal sector is growing rapidly in other regions such as Eastern Europe (World Bank 1994, p. 123).

Early retirement. Most DB plans provide for early retirement with little or no reduction in pension amount. Early retirement promises are tempting to policy-makers because they hide unemployment or constitute a give-away to special groups. The initial cost is low, but the long run cost, as many workers retire early, is high, both in terms of its deleterious impact on the system's finances and its negative impact on the supply of experienced labor in the economy.

National saving. While many economists believe that PAYG systems have decreased national saving and therefore growth, other economists disagree; the case has not been unambiguously decided. But it does seem clear that funded systems can be used to increase national saving, and thereby correct sub-optimal saving that may result from other causes (myopia, high private discount rates, taxation of investment returns or corporate profits). Traditional systems do not make this efficiency-improving correction.

Low returns on publicly managed reserves. Occasionally PAYG systems accumulate reserves as revenues may exceed expenditures temporarily. In traditional systems these reserves have been publicly managed. It is difficult to secure data on the returns to these reserves, but data gathered for the 1980's indicate that publicly managed pension reserves fared poorly and in many cases lost money--largely because public managers were required to invest in government securities or loans to failing state enterprises, at low nominal interest rates that became negative real rates during inflationary periods. At the same time, privately managed pension funds were earning high returns, in countries where they play a large role--because they were able to invest in diversified portfolios on a competitive basis (World Bank 1994, p 95). Clearly this poses a problem for the financial sustainability of the publicly managed funds. It also indicates that their capital may have been inefficiently allocated--making it

easier for governments or state enterprises to run large deficits or to spend more wastefully than they could if they had to rely on a more accountable source of funds and making it more difficult for the private sector to get access to these funds for productive investment. More generally, political rather than economic objectives are likely to determine the allocation of publicly-managed pension reserves, and therefore the impact on productivity is not maximized.

Misallocation of public resources. As expenditures mount, these reserves disappear and traditional systems in many countries have run large deficits, which then become the responsibility of the government. In 1990 Austria, Italy and Uruguay spent more than one-third of their public budgets on pensions. Since the government's ability to tax is limited by economic and political considerations, high public pension spending can squeeze out government spending on growth-promoting investments such as infrastructure, education and health services, or it can lead to inflation--a long term problem in many Latin American countries--if the government tries to maintain this spending through deficit finance.

II. Inequities in Traditional PAYG DB Systems

Less well known are the inequities in traditional PAYG DB systems. These inequities fall into two major categories: better treatment for high than low income groups within cohorts stemming from the DB nature of the programs and transfers from younger to older generations stemming from their PAYG financing. Many of these inequities cannot be corrected by simple design changes--to eliminate them requires a basic structural reform.

Better treatment of high income groups. At first glance, the benefit formulas of most public DB system look progressive (that is, redistributive from rich to poor) or, at least, distributionally neutral. However, empirical studies of lifetime transfers, i.e. the present value of lifetime benefits received minus lifetime contributions paid, in countries as diverse as the U.S., U.K., the Netherlands and Sweden, show little if any redistribution from rich to poor (for

a summary of this literature see World Bank 1994, pp. 133-34). In fact, in pre-reform Latin America it is likely that the redistribution went the other way. How can this be?

Several factors are at work, making traditional systems inequitable while they create the appearance of equity. First of all, it is by now a well-known fact that high income people live longer than low income people. High income people have access to better medical technology, nutrition and information about healthier life styles. As a result, even if the annual benefit formula looks progressive, this is partially counteracted by the fact that high income people live longer and collect benefits for more years. Many low income people die before they even begin to collect pensions. This source of regressivity appears inevitably in defined benefit schemes, as well as any other scheme where high and low income people are mandatorily put into the same annuity pool. It can be avoided only if different annuity terms are applied according to socio-economic status (recognizing that this signals different risk categories), or if the purchase of an annuity is not obligatory.

Second, high income people enter the labor force later than low income people, but often get pension credits while attending university, even though they don't contribute. This inequity could be corrected by granting credit only for years of actual contributions, but politically this has been difficult to achieve in unfunded DB plans. Third, higher income groups frequently are eligible for superior benefit formulas. For example, in Brazil they have an easier time documenting their years of covered employment and qualifying for early retirement. In Ecuador they can borrow from the pension fund at negative real rates of return. In Costa Rica some privileged occupations have, until recently, received replacement rate of 100% or more of their final wage.

Also favoring high income people are their steeper age-earning profiles. Often DB schemes base their benefits on wages earned during the last 3 or 5 or 10 years of employment. Then, workers with steep age-earnings profiles have contributed for many years according to their lower wages when young, but receive a pension that is based on their higher wages shortly before retirement. Even if

the averaging period for the reference wage base is extended to 30 or 40 years, workers with steep age-earnings profiles have a lifetime distributional advantage relative to those with flat profiles, because the present value of their lifetime contributions will be smaller even if they have the same average reference wage. This problem could be avoided by giving accrual rates that vary according to the age at which each contribution was made--but this becomes very complicated and, in the limit, very much like a DC plan.

Furthermore, given that poor people probably have a higher discount rate than rich people, the utility cost of the required contribution for the poor is probably greater than that for the rich. Adding to this is the likelihood that when a retirement plan is introduced rich people can maintain their previous consumption levels by reducing voluntary saving while poor people often have no voluntary saving to reduce. In other words, the shift in lifetime consumption from youth to old age is more binding for low income groups and is more easily offset by high income groups--an observation which is related to the higher initial discount rate of the former. These problems, incidentally, are retained for all schemes that tax people now in return for retirement income later, including the reformed schemes that put these contributions into mandatory saving plans.

Financing methods also lead to regressivity. Typically, only labor earnings are taxed--and almost invariably with a ceiling on taxable wages. This means that the full income of poor people is taxed, while only a portion of the income of rich people is taxed. Since a flat tax (the same rate for rich and poor) is generally used, it follows that poor people pay a higher proportion of their income in social security taxes than do rich people, another factor that leads to a higher discount rate and utility loss for them. This could be changed --by taxing all income, by exempting income that falls below a specified threshold, by charging progressive tax rates, and/or by removing the ceiling on taxable wages. The fact that this has practically never been done under traditional systems, however, suggests that strong political economy forces prevent them from redistributing income to the poor.

General revenue finance might be more progressive than the payroll tax in industrial countries, because it imposes a lower relative burden on low wage-earners. However, it adds a new equity problem in developing countries where only a portion of the labor force--generally the better-off portion--is covered by social security. For example, in Brazil in the 1980's 75% of the top income quintile but less than 15% of the bottom quintile was covered by social security. If general tax revenues from the broad population are used to cover pension costs, this means that outsiders, who are less well off, are subsidizing insiders. This happens in Guatemala, where general revenues are used to finance one-third of the costs of the public pension program which covers only a small minority of its labor force, those who are relatively high earners in the formal sector (World Bank 1994, pp. 132-3).

Finally, "capricious" redistributions also occur in DB systems, e.g. from dual to single wage earning families, from women who work in the labor market to those who work at home, from non-evaders to evaders, and from workers who postpone retirement to those who retire early. The non-transparency of the benefit formulas enables these redistributions to occur without an open public evaluation--and enables groups with power and expertise to manipulate the system to their advantage. Besides their perverse impact on equity, these redistributions create incentives for workers (women, evaders, early retirees) to withdraw from the formal labor market and they thereby impede economic growth.

Redistributions to early cohorts from later cohorts. Generally payroll tax rates in PAYG plans are low initially, because they must cover only a small number of retirees, but they rise through time, as the system matures and the dependency rate increases. The forthcoming demographic transition exacerbates this transfer. As a result, covered workers who retire in the first 20-30 years of a PAYG scheme contribute for only part of their working lives, and at a low rate, hence receive in benefits much more than they have contributed, while their children and grandchildren get back less than they paid in and lower rates of return than they could have earned elsewhere. For example, in the U.S. real rates of return were 15% for workers who retired in the 1950's or 1960's and 8% for

those retiring in the 1970's--signifying large positive transfers to these cohorts. But the rate of return is expected to fall to 2% for workers who retire in the future, less than they could get elsewhere--signifying a negative transfer (World Bank 1994, pp. 133-36). That is, there is a permanent transfer of income from later to earlier cohorts. If the income transfer is consumed by the old and the promise of future benefits reduces the retirement savings of the young, it accounts for the possibly negative impact of PAYG on national saving and growth. Does this transfer increase or decrease equity?

Sometimes we may want to redistribute across generations; this may be a way to allow older cohorts to enjoy some of the fruits of future growth. However, a problem with using PAYG systems for this purpose is that inter-generational redistribution takes place automatically, without a full discussion, or even without a full public understanding, of what is going to happen. In most cases, the people who are being redistributed away from weren't old enough to participate in the discussion; only the gainers participated--raising question about equity from the procedural point of view. Moreover, many of the gainers in the older generation, including those who get the largest transfers, are lifetime high earners, while losers from the younger generations include low earners.

For example, suppose the annual rate of real wage growth is 2%, so the average wage doubles in 36 years. Compare the income and transfers received by a high earner (who gets twice the average wage) when the pension program starts, with those of a low earner (who gets half the average wage), 36 years younger. Even taking into account real wage growth, the older worker has a lifetime income that is double that of the younger worker, yet he receives a positive redistribution from the pension plan, while the younger worker receives a low or negative redistribution (that is, he loses money), because contribution rates have risen and benefit rates fallen in the interim.

This kind of redistribution from young low earners to old high earners is especially likely to occur given that the first cohorts to be covered are usually well off groups while later additions to the plan include poorer groups. Ironically, even within the older cohorts, the above-market rate of return they

receive translates into a much larger lifetime income transfer for their wealthier than their poorer members, since the former receive this generous return on a much larger reference wage and contribution base. In Colombia, for this reason, the absolute value of the transfer under the old PAYG system was eight times larger for a high income worker than for a minimum wage worker (World Bank 1994, p. 135).

Finally, the younger generation as a whole loses because of the inefficiencies and growth-inhibiting features of traditional social security programs.

These inter-generational redistributions, that often favor wealthier members of the older cohorts, are unavoidable in PAYG schemes. While equity inevitably involves value judgements, most people would agree that these intra- and inter-generational redistributions are not equitable in terms of procedure or outcome. Moreover, some of the inequities imply incentives or transfers that simultaneously reduce efficiency, and some of the inefficiencies seem likely to particularly hurt low income groups. Thus, there is ample room to improve both equity and efficiency in traditional DB PAYG systems.

III. Efficiency Improvements in Reformed Systems

Starting with Chile in 1980, followed by Colombia, Peru, Mexico, Uruguay and possibly Bolivia in the 1990's, many Latin American countries have been reforming their pension systems, in an effort to get greater efficiency while improving equity at the same time. These countries have instituted multi-pillar systems that are partially funded (instead of being largely PAYG), that utilize private management of these funds (instead of pure public management), that tie benefits directly to workers' contributions plus investment earnings (in a defined contribution rather than a defined benefit plan) and that, in most cases, have a separate public tax-financed mechanism for redistributing retirement income to low earners. Specifically, these systems generally contain three components, or pillars:

a mandatory publicly-managed tax-financed pillar for redistribution;
a mandatory privately-managed fully funded pillar for saving; and
a voluntary pillar for people who want more protection in old age.

The second pillar, which is FF DC, is the core of most of these plans, and is the most innovative part of the pension reforms. Essentially, people would be required to save for their old age, and this pillar would handle their savings. Let me briefly explain why it is supposed to eliminate the distortionary effects described in Part I.

Why should an FF DC plan raise efficiency? The close linkage between benefits and contributions, in a defined contribution plan, is designed to reduce labor market distortions, such as evasion by escape to the informal sector, since people are less likely to regard their contribution as a tax. And those who do evade bear the cost in the form of lower benefits rather than passing the costs on to others; in contrast to DB plans where evasion requires a contribution rate increase to cover total costs, thereby setting off a vicious cycle that increases the distortionary effects.

Also in a DC plan the accumulated contributions and investment earnings are eventually converted into the worker's retirement income, via an annuity or gradual withdrawals. This means that people are less likely to retire early--since if they do they will bear the cost in the form of lower annual benefits. It also means that as longevity increases, many workers will choose to work longer instead of retiring at the previous age with a lower annual pension--thus retirement age is automatically increased by the individual without a difficult political decision.

The principle of full funding means that countries won't make promises at the early stage of a plan, that will result in fiscal deficits and high tax rates later on. It also helps to build long term national savings which will increase productivity and growth, hence raise both wages and pensions in the future. If a developing country institutes a multi-pillar system without a prior PAYG system, private saving will increase if the mandatory saving rate exceeds the voluntary rate and crowd-out effects are small. If an industrialized country with

an existing PAYG system replaces it with a multi-pillar system, national saving increases if benefits are cut or taxes are increased, usually to cover transition costs. If a country with partial coverage shifts to a partially funded system, as in Latin America, we would expect a mixture of these two effects. The funds are privately managed to ensure that economic rather than political objectives dominate and that the rate of return--both to the fund and to the economy as a whole--is maximized. Private pension funds are more likely to enjoy the benefits of investment diversification, including international diversification, that enables them to increase their yield and reduce their risk--thereby enhancing efficiency. Moreover, they are likely to spur financial market development, by creating a demand for new financial instruments and institutions--especially important in middle income countries such as those in Latin America.

For all these reasons, the reforming countries expected economic efficiency to improve with the establishment of their new pension systems. What has actually happened?

Empirical evidence on growth effects. Growth effects are notoriously difficult to quantify and prove, in part because relatively little experience and data are available and in part because, even if we had the data, it would be difficult to build models that capture all the complex dynamic interactions; that is, it is hard to specify the counter-factual. Nevertheless, the available evidence indicates that the observed growth effects are positive and possibly large. They come mainly from increased national saving and financial market development, since the effects on retirement age and evasion are even more difficult to measure at this point. (For a summary see James 1996).

Two types of evidence are available--simulations that estimate future changes, and econometric or descriptive analysis of actual changes. For example, in planning its mandatory occupational scheme, to which contributions will eventually reach 12% of payroll, Australia estimated that national saving would increase by 1.5% of GDP in the long run, thereby augmenting by 70% its current net national saving rate (which is 2.2% of GDP) (Bateman and Piggott 1997). In simulations for Mexico, total saving was found to rise between .4% and 2.1% of

GDP, if the transition is tax-financed (or if it is debt-financed and Ricardian equivalence holds so that private saving goes up to offset public dissaving) (Ayala 1996).

The only two countries that have had a pension reform long enough for saving effects to be estimated are Switzerland and Chile. In Switzerland the national saving rate rose from 6 to 8.5% of GDP in the decade after the funded second pillar became mandatory and the entire increase occurred in pension funds and related institutions such as insurance companies (Hepp 1997).

According to regression analyses (Haindl Rondonelli, 1996; also see Morande, 1996), pension reform played a major role in increasing the national saving rate in Chile from 16.7% of GDP pre-reform (1976-80) to 26.6% post-reform (1990-94). Specifically, pension saving accounts for two-thirds of the increase. A more modest positive effect on private saving, 4% of GNP by 1994, was found by Agosin, Crespi and Letelier (1996). All these analyses are very preliminary, given the short time period involved and ambiguities concerning the correct specification and counter-factual.

The fiscal costs of the transition, if financed by borrowing, may have canceled out the positive effect on private saving (see Agosin et al 1996). However, to the degree that the transition was financed by increased taxes or reduced public consumption, the positive effect on national saving was reinforced. While we do not know what would have happened without pension reform, the Chilean government accumulated a fiscal surplus while planning for the reform in the late 1970's, it then ran a fiscal deficit in the early 1980's shortly after the reform was instituted, and by the late 1980's and 1990's the government's budget was in surplus again.

Even more important is the financial market deepening induced by the reformed pension system. While insurance and annuities markets have been stimulated to grow and develop new products even in countries such as Switzerland and Australia, the biggest effect here is observed in Chile. Chilean financial markets have become more liquid as the pension funds have increasingly invested in a diversified portfolio of stocks as well as bonds; the number of traded

shares and their turnover increased; demand was created for the equities of newly privatized state enterprises; information disclosure and credit-rating institutions have developed; the variety of financial instruments including indexed annuities, mortgage and corporate bonds have grown; and asset pricing has improved. Preliminary econometric analysis indicates that financial market deepening induced by the reformed pension system increased total factor productivity 1% per year, or half of the increase in total factor productivity in Chile (Holzmann 1996). So we have both a priori and ex post reasons to be optimistic about the efficiency and growth effects of pension reform in Latin America.

IV. Equity Under The Reformed Systems

What about equity? While a careful quantitative analysis of the distributional effects of the reforms has yet to be carried out, it appears that the worst inequities of the old system have been avoided, but some remain, and some new problems have been introduced. Moreover, an evaluation of equity effects depends closely on value judgements about what is equitable. Which is more equitable--a reduction in inequality while the average pension is unchanged or an improvement in the pension received by all income groups while inequality increases? Which is preferred--redistribution to all the poor, to the poor who have contributed for most of their working lives, or to lower middle class workers as well? In other words, who should get a boost in the name of equity and do we care more about absolute or relative positions? Different reform plans have different answers to these questions.

Elimination of old equity problems. All of these reform plans include an FF DC pillar which should improve equity in the broad sense that they are designed to stimulate economic growth; in the long run this is the best way to raise the income of low and middle class earners (see Valdes-Prieto 1994 for simulations that demonstrate this effect). Moreover, they give these low earners access to capital market investments, which previously were available only to

high earners, and which have the potential to yield high returns (see Report of the Advisory Committee on the U.S. Social Security System, 1997, which projects a higher expected return to reform options that include a large funded pillar). The replacement of DB by DC removes special benefits to privileged groups, including early retirement benefits, advantages to workers who have steep age-earnings profiles, and the subsidy of insiders by those outside the system. Funding a large part of the pension system reduces inter-generational redistribution as well as the disparate return between early groups to be covered and late entrants that occurs in pure PAYG systems. Beyond that, practically all of the reformed systems include a publicly managed component, or pillar, that is targeted to low income groups and is therefore likely to be more equalizing than traditional systems that provided a higher pension to high wage earners. However, this public pillar takes very different forms in different countries, with different distributional effects.

Comparison of equity effects of different public pillars. Chile provides a minimum pension guarantee to all workers who have contributed for at least 20 years, supplemented by social assistance for others. Both of these are financed out of general revenue rather than the payroll tax; this is a more broad-based, efficient, and probably more progressive revenue source. Partial reliance on general revenue finance reduces the disproportionate utility loss to low earners that is implied by a flat payroll tax (see earlier discussion). The danger that low income outsiders will be subsidizing insiders is offset by the means-tested social assistance program.

The minimum guarantee, now pegged at about 28% of the average wage, is enough to keep pensioners out of poverty. If the annual benefit that can be financed by a worker's own accumulation is less than the minimum guarantee, the pension is topped up by the government to bring it up to the threshold. If a low income worker (say, one earning half the average wage) contributes for only 20 years, he is likely to need some topping up, but if he contributes for 40 years, his own accumulation will probably suffice. Thus low income workers who have lifetime formal labor market participation will not get a redistribution, and the

converse is also true. No benefit at all is provided to lower middle class workers whose own accumulation will push them just above the threshold. If your concept of equity is to bring all people to the poverty line, the Chilean scheme is just right, but if your concept includes a redistribution to low wage and lower middle class workers who have contributed for many years (as would be accomplished by a guarantee that increases with years of service), the Chilean scheme is not optimal from an equity point of view. Its cost should be very low--but we do not yet know how low since few workers have retired under the new system.

In contrast, Argentina provides a flat benefit, also 28-30% of the average wage, to all retirees who have contributed for 30 years--a much costlier arrangement than that in Chile. Unlike Chile, middle and upper income workers receive the public benefit in Argentina--in fact, they receive larger than average lifetime benefits because of their greater longevity. But low income workers continue to receive the largest share of the total, because they constitute the largest group. The benefit is financed by a payroll tax, up to a taxable ceiling. This financing source means that low income groups pay a larger share of the total cost and a larger share of their total income than in Chile, and some inter-generational transfers remain.

The flat benefit in Argentina goes only to workers who have contributed for most of their lifetimes, in sharp contrast to Chile where long term contributors are unlikely to receive anything. This benefit and tax structure means that low wage earners with less than 30 years of participation are big losers in Argentina; women are disproportionately losers. On the other hand, middle class workers with more than 30 years' service fare better in Argentina than in Chile; their retirement income is increased and diversified, thereby reducing risk. Thus Chile scores higher on keeping people out of poverty at the lowest possible cost, but Argentina scores higher on rewarding the average worker who has contributed to the system rather than evading, throughout his life (see Figure 1).

Australia, far away from Latin America, has also reformed its pension system but retains a means- and asset-tested benefit in its public pillar,

financed out of general revenues. The Australian guarantee is more generous than that in Chile, is received by many more people (currently two-thirds of all pensioners, but this proportion will probably decrease as the mandatory saving plan is phased in) and therefore costs much more. The fact that it takes other income and assets into account makes it more equalizing but may also discourage saving from other sources. While less targeted than the Chilean system, it is probably more redistributive to low income groups than the Argentinean system, because it is financed out of general revenues, is not tied to years of contributions, and excludes the top earners from benefits.

In all three cases, perverse intra- and inter-generational redistributions are reduced by the partial reliance on a DC plan and a public pillar that is more targeted toward low earners than was the case under traditional PAYG DB plans. Other countries have chosen yet other forms for their social safety nets. For example, in Mexico the government deposits one peso per day into every contributing worker's account (which will eventually yield a small benefit per year of contributing service) and workers are guaranteed a minimum pension as well. These cases provide us with an idea of the wide range of benefit and financing options available in the public pillar, and their diverse equity effects.

Remaining problems and new problems. New equity problems arise, however, from the design of the private funded pillar. Some of these problems might be termed capricious distributional effects, and some of them involve systematic biases in favor of high income groups.

1. Capricious distributions. Random fluctuations in the interest rate across time have unpredictable distributional effects on the pensions of different cohorts in an FF DC plan. Some cohorts will be exposed to high interest rates, while others will face low rates during the years in which they work and accumulate. In a DC plan, the former group could receive a much higher pension than the latter--a capricious effect that is due to accidental market forces rather than individual behavior or government policy. While this does not represent "redistribution" it might be considered "inequitable." The chance that

this will happen is mitigated by international diversification of investments and by the long term nature of retirement investments; and it can be partially offset by the public pillar, which diversifies sources of retirement income. Nevertheless, different cohorts will fare differently in a DC plan, through no fault or credit of their own, for this reason.

A different type of equity problem is created in the annuities market by the interest rate at the point of retirement. If the interest rate is low at that time, this will reduce the size of the annuity that can be purchased by retiring cohorts with a given accumulation. They can avoid "locking in" to this low interest rate by purchasing variable annuities, whose value varies with the interest rate and the price of financial assets. Nevertheless, this choice between a low fixed annuity versus an uncertain variable annuity will be considered a choice between two evils by workers who are risk-averse; one might consider it inequitable that some cohorts, but not others, will face this problem. Thus, certain types of capricious distributional effects are eliminated by the shift from a DB to a DC plan, but others are created.

2. Systematic biases in favor of high earners. More troublesome are systematic biases that advantage high wage-earners. These biases stem from the way annuities markets and privately managed FF DC plans operate. In situations where these biases are large, the new and old pension systems may end up having very similar distributional consequences.

First, if high and low earners are put into the same annuity pool, at the point when they convert their retirement accumulation into a pension, low earners will end up paying more than their expected benefits while the opposite is true for high earners, who are likely to live longer--just as was the case under traditional DB plans. Most of the reformed systems allow low earners to avoid this loss of real income by choosing a gradual withdrawal of their retirement accumulation, instead of requiring the purchase of an annuity--but those who choose this option do so at the expense of foregoing longevity insurance. It is possible that competition in the annuities markets will eventually produce better

rates for low earners, who belong in a lower risk category, but as yet this has not happened.

Second, low wage workers are likely to have a higher discount rate and therefore to suffer a greater utility loss from the mandated saving for all the reasons that were mentioned earlier in connection with PAYG plans--their income is lower, the required contribution is a higher proportion of their total income, and they are less able to dissave part of their voluntary saving to maintain their current consumptions levels, because they have little or no voluntary savings to dissave. The last point may be even more relevant to FF DC plans than to PAYG DB plans. But basically, the current cost of any mandatory retirement plan is likely to be more binding on and more painful to the young poor than the young rich. This is one reason for including a large compensating component in the system that targets future benefits to the poor, as in the public pillar of a multi-pillar system.

Other problems such as low coverage and high evasion may remain--the former because of compliance difficulties in developing countries with many small or self-employed enterprises and the latter because of the high discount rate of many workers and the high payroll taxes imposed for other services. However, the equity implications of low coverage and high evasion are different in DC and DB plans; in DB plans they are less likely to result in subsidies from outsiders to insiders and from non-evaders to evaders.

Third, the privately managed FF DC plans have been criticized for their high administrative costs, relative to well-run centralized systems that enjoy economies of scale and do not incur marketing costs. If the pension investment companies cover these costs by charging a flat fee per account for their services, those with low contributions and assets will suffer a larger deterioration in their net returns. The flat fee may be non-discriminatory, in the sense that it reflects the real cost of maintaining (keeping records, sending statements for) each account, but it nevertheless hurts low earners more than high earners. Put another way, different investment strategies and pension systems may be appropriate for high and low wage earners. If one system offers

higher gross returns but also higher administrative costs that are uniform per account, while another system offers lower gross returns but lower administrative expenses per account, low earners might fare better under the latter, on a net return basis. Forcing them to choose the former may leave them with lower net returns than they could get elsewhere.

This line of thought leads to the possibility that flat fees should not be permitted in mandatory programs (implying cross-subsidies between high and low earners), or that fees charged to low earners should be subsidized by the government, or that each pension fund should be required to offer at least one investment option where the costs are small for small accounts. In the case of Chile, the spread between gross to net returns was indeed high, and it was highest for low earners, especially during the early years of the program (Shah, 1996). As time passed this spread declined and competition (or adverse publicity) forced most pension funds to phase out their flat fees, without government intervention--but the same problem remains in other Latin American countries. This may be one reason why low wage workers have not shifted to the new system in Peru, while high wage workers have shifted.

A fourth problem for low earners arises if they are less informed than their wealthier counterparts about financial alternatives. They may make poor financial decisions, and be misled by unscrupulous salesmen, about investment choices. In England, when workers were permitted to opt out of their employers' plans, many workers were induced to buy insurance policies that were not in their best interest. Low wage earners may be more prone to this sort of mistake, although we have no evidence that this is the case. We do have evidence from the choices made in 401(k) plans in the U.S. that low earners are more likely to be overly conservative, to choose a "safe" portfolio of government bonds, that in fact is unsafe in the sense that is bound to yield a relatively low rate of return.

To avoid this problem it is essential to have a public education campaign informing workers about how to make good investment decisions and tight regulation of the funded pillar. The regulation should exclude unqualified

pension fund managers, require diversified investments, and set forth clear information disclosure standards, thereby limiting the risk and the possibility of making very bad investment choices. So far every reforming Latin American country has imposed such regulations. Another possibility is to structure the program so that the investment choice is delegated to those with greater financial expertise, such as employers and union representatives, who act for an entire occupational or company-wide group of workers, both rich and poor. This course has been followed in OECD countries such as Australia and Switzerland. While it may reduce informational problems and administrative costs, it may also create principal-agent problems, to the detriment of workers.

Nevertheless, even in a well-regulated system, the fact remains that where there is choice, inequality is likely to increase. Moreover, investment returns and labor returns may be correlated, making the income distribution more unequal over-all. At the same time, the expected return to all participants, both high and low earners, is greater than that expected from a continuation of the old PAYG system. This is due to the higher expected growth rate it generates and the higher return to funded plans, given the unfavorable demographics that lie ahead.

Which is better--a regimen where almost everyone gets a higher pension, but the variance among individuals has increased, or one where participants get a lower but more uniform pension? As with the choice between targeting low income groups (Chile and Australia) versus rewarding all long term contributors (Argentina), the answer is not objective and clear-cut; every society and citizen must make a value judgement on these issues.

Finally, opponents of multi-pillar pension systems have argued that once the redistributive objective becomes more transparent, as it does in all the reformed systems, high income groups will become less willing to make transfers to low income groups. This argument rests on the assumption that redistribution occurs in nontransparent PAYG DB systems because high earners have been fooled, but once they learn the truth, they pull back on the transfers. This is a curious line of thought, especially in view of empirical evidence indicating that traditional systems did not in fact redistribute much from rich to poor--perhaps

because the rich quickly learned how the system operated and how they could manipulate it to their advantage. While the willingness of the "haves" to redistribute to the "have nots" is probably very limited, it may indeed be greater for systems that accomplish this redistribution in the cheapest and most efficient way--and the reformed systems have the edge on these grounds. .

V. Conclusion

As Latin American countries have reformed their pension systems, they have not faced a trade-off between equity and efficiency. In fact, this is one of many instances where countries were initially operating well within the efficiency-equity frontier; it was possible to have more of both.

The new systems show both promise and evidence of being more efficient than the old. They have also eliminated or greatly reduced some of the pre-existing equity problems, stemming from poorly designed defined benefit formulas and pay-as-you-go finance methods. At the same time, they have introduced new equity problems, stemming from annuity pricing, savings offsets, administrative costs, imperfect information and inequality under choice. Thus, perverse redistributions within cohorts are still possible, although inter-generational redistributions are less likely. While we are beginning to have empirical estimations of the growth effects of the reformed systems--and they are optimistic--as of yet we do not have empirical analyses of their distributional effects. This is, in part, because these calculations should be done on a lifetime basis and the new systems have not been in place for anyone's lifetime. It is also, in part, because we cannot calculate the changes in distribution brought about by the reforms unless we know the counter-factual, and this is quite different from the status quo, which is non-sustainable in every existing PAYG system. Finally, we may get different answers depending on whether we define equity as reducing inequality, eliminating poverty, or in some other way.

As we have seen, distributional effects depend on many detailed aspects of the system; pension reform can accommodate a variety of value judgements about

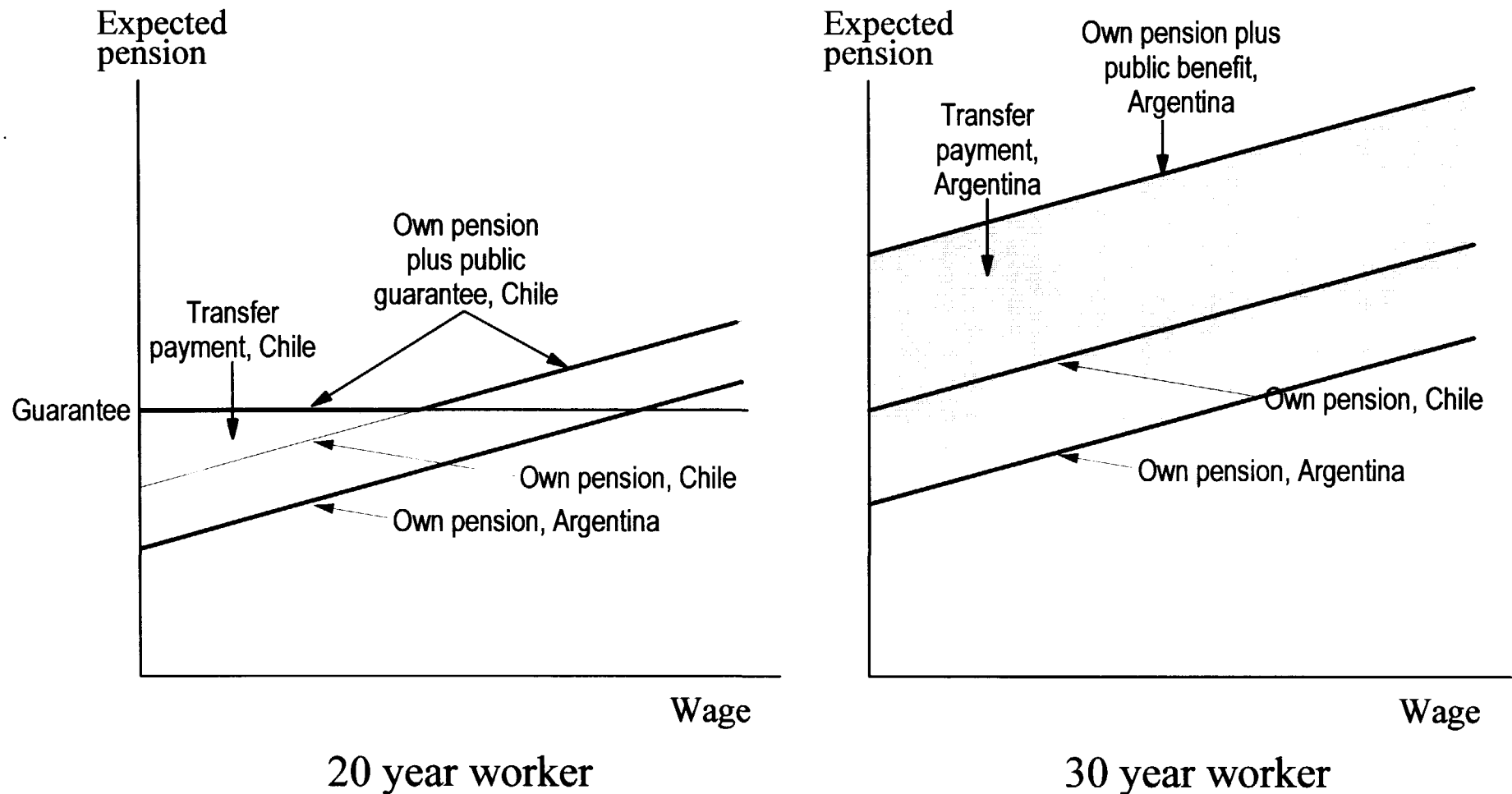
equity. And diverse pension systems, both reformed and unreformed, can end up having similar distributional effects, albeit by different routes. While the efficiency improvements from pension reform create the possibility of improving everyone's welfare, in reality the gains are distributed unevenly and some people lose. The identity of the winners and losers depends in part on the ability of different groups to use whatever opportunities are presented to them--and this is likely to be positively correlated with prior income, assets and education. But it also depends on many detailed features of the reform, in particular the design of the public pillar and the treatment of administrative costs in the private pillar, which must therefore be specified with great care and with calculations about the distributional effects of alternative options.

On the one hand, if you believe that the underlying configuration of political power in a country is fixed and shapes the distributional consequences of its policies, the details of the new and old pension systems are endogenous and will be chosen to bring about very similar distributions. On the other hand, if you believe that the adoption of a new pension system reflects and reinforces a changing pattern of political power, this implies that it may be designed to have different and possibly more equitable distributional consequences than the old. We can hope for the latter and strive to bring it about, but only careful empirical analysis in the future will allow us to determine if this goal has been achieved.

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Figure 1 Own Pension, Public Transfer and Years of Service,
Argentina versus Chile



Note: "Own pension" is lower in Argentina because their contribution rate to the funded pillar, net of disability and survivors' insurance and administrative costs, is about 7 percent, versus 10 percent in Chile. Rates of return are assumed to be the same in Argentina and Chile.

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